

ESSAYS IN SOCIAL GERONTOLOGY AND METHODOLOGY

Kevin Brewer

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1. EVALUATION OF DISENGAGEMENT THEORY

- 1.1. Introduction
- 1.2. Evaluation
- 1.3. References

1.1. INTRODUCTION

Lynott and Lynott (1996) described Cumming and Henry's (1961) "Growing Old: The Process of Disengagement" as a major transformation in "gerontological thinking" because it was the "first public statement wherein theory in ageing is treated as a form of scientific activity in its own right, separate from the practical applications, information gathering and policymaking" (p749).

Prior to this work, ageing was viewed as an individual problem, and as a process of adjustment to the "natural" events of later life, like retirement, poverty, and ill health (Lynott and Lynott 1996). Disengagement theory, as proposed by Cumming and Henry (1961), shifted attention from the individual to the social system as the focus for understanding ageing ¹.

In the industrial social system, individuals are less effective at work as they grow older, and the social system responds to this by the institutionalisation of disengagement in the form of retirement. By retiring/disengaging the individual benefits the social system and themselves. "The process of disengagement is portrayed as a gradual one, with continued withdrawal in later life the hallmark of success" (Lynott and Lynott 1996). Disengagement is "an inevitable mutual withdrawal" (Cumming and Henry 1961) which maintains the state of equilibrium in society.

Furthermore, it is "an inevitable process in which many of the relationships between a person and other members of society are severed and those remaining are altered in quality" (Cumming and Henry 1961 p211). The pivot of disengagement is the forfeiting of a major role - for men that is work with occupational retirement, and for women it is children as the offspring leave home.

"A key assumption made in this approach is that 'ego energy' declines with age and that, as the ageing process develops, individuals become increasingly self-absorbed and less responsive to normative controls" (Phillipson and Baars 2007 p71). Thus disengagement is both natural and desirable.

¹ Disengagement theory was revised by Cumming (1963) and Henry (1964).

The basis of the theory were interviews with 279 healthy 50-90 year-olds in Kansas City, USA over a five-year period. It grew out of the ten-year Kansas City Studies of Adult Life (Moody 1998).

1.2. EVALUATION

1. Disengagement is not beneficial.

i) Individuals do not necessarily benefit from the compulsory withdrawal from work as individuals "resent forms of disengagement like mandatory retirement and other age-related exclusionary policies" (Lynott and Lynott 1996).

ii) Withdrawal of older people is not necessarily good for society. It involves "the removal, either voluntary or forced, of some of the most knowledgeable, capable, and experienced performers in society" (Cox 2001 p41).

2. It ignores individual experience.

i) Disengagement theory is explaining what is happening at the level of the social system not the individual's experience. In fact, Cumming and Henry argued that there is considerable variation at the individual level (Lynott and Lynott 1996).

ii) Gubrium and Lynott (1983) challenged the "facts" about ageing implicit in disengagement theory. The experience of ageing is socially constructed: "one feels old or not, behaves elderly or not, feels satisfied with life or not, depending upon the 'background expectancies' ..or relevant worlds serving to interpret later life experiences" (Lynott and Lynott 1996 p754).

iii) Occupational retirement can be a positive experience and an opportunity for new activities for individuals who disliked their jobs. Cox (2001) gave the example of "Samuel Y" whose retirement from hard manual labour, and "from the 7-to-4 work routine seems to have considerably enriched his life".

iv) The individual's own experience of ageing was regarded as less important than externally observable behaviour, and so Cumming and Henry did not collect much data on experience (producing "the assumption of meaning problem"; Hochschild 1975).

Retirement is not the same for everyone because of the meaning attached to the event. Crawford (1971) found

that English men's meanings about retirement could be divided into three types - "retiring back to something - the family", "retiring from something", and "retiring for something". The second type experienced the event most negatively.

3. Disengagement is not universal.

i) Disengagement is an "omnibus variable" (Hochschild 1975); ie: an umbrella term covering many different meanings.

ii) There are different types of disengagement. It is possible to disengage from paid work without disengaging from society in other things. "Total withdrawal from society is quite uncommon" (Moody 1998).

iii) There is a variety of experience: "In later life, disengagement is the preferred style for some, whereas continued activity remains attractive for others" (Moody 1998 p75).

iv) Disengagement has been interpreted to mean a greater "interiority" (increased attention to the inner psychological world) rather than as an outward behaviour of disengagement from society (Moody 1998).

v) Riley et al (eg: 1972) emphasised the experience of ageing in terms of cohorts. Ageing is not a universal experience in a society, but varies with the age cohort. So, for example, individuals who were born in the 1920s in the UK were young adults during the Second World War and this has dominated their experiences, while individuals born after 1945 were young adults in the time of social change in the 1960s.

4. Contradictory evidence.

i) The theory is unfalsifiable (Hochschild 1975). It was proposed that disengagement is universal (in all places and all times), but how to disprove this assertion?

Many individuals in the original sample of Cumming and Henry (eg: 22% of 70-74 year-olds) did not disengage, and Cumming and Henry viewed them as "unsuccessful" adjusters to old age, "off-time" disengagers, members of "a biological and possibly psychological elite", or a culture-bound variation in disengagement ("back-door" explanations or "escape clause"; Hochschild 1975), rather than as evidence against their theory (Hochschild 1975).

ii) Disengagement is not inevitable and many individuals remain active or become more active in later life.

5. Negative consequences of the theory.

i) It can produce a self-fulfilling prophecy: "If we expect and demand less of people because they are old, they are likely to conform to this expectation" (Coleman 1993 p85).

ii) It has been accused of condoning indifference to the elderly as an inevitable part of disengagement (Coleman 1993). Older individuals are seen as choosing to withdraw, and are thus shunning help. It is also accused of "buttressing custodial forms of treatment" (Coleman and O'Hanlon 2004).

iii) Disengagement theory helps in the "problematization" (Foucault 1984) of retirement. This is where an ordinary aspect of life is transformed into a "universal dilemma" that requires professional intervention (Katz 2000).

6. It supports the status quo.

i) The emphasis is upon the smooth functioning of society, and so traditional retirement from the labour force is justified. Thus social withdrawal of the elderly is an accepted norm that goes unchallenged (Estes et al 2003).

ii) It accepts that old age is a distinct stage, and presents retirement as a "natural" period of transition: "In order to legitimise its generalisations, disengagement theory self-praised itself to objective and value-free rigour of research methods: survey and questionnaire methods of gerontological inquiry. In a sense, by arguing for 'disengagement' from work roles under the guise of objectivity is a very powerful argument for governments to legitimise boundaries of who can work and who cannot based on age" (Powell 1999 quoted in Powell 2001).

7. Miscellaneous.

i) Disengagement theory has been accused of describing what happens rather than explaining the cause (Harding and Palfrey 1997).

ii) The event of occupational retirement is not necessarily so simple in Western society today because of long-term employment and concerns about the affordability for governments of enforced retirement. Magnus (2009) argued the case to "abandon the idea of a fixed age for retirement, and take an innovative and holistic approach to the employment of the over-65s".

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2. THE BERLIN AGEING STUDY (BASE)

- 2.1. Berlin Ageing Study
- 2.2. Key strengths
- 2.3. References
- 2.4. Appendix 2A - Hawthorne effect

2.1. BERLIN AGEING STUDY

The Berlin Ageing Study (BASE) ² is a longitudinal study that was established in 1989 (Smith et al 2002). The baseline sample was 516 individuals aged 70 years or more (half being 70-84 years and half 85-103 years old) from the western districts of Berlin who were interviewed between 1990 and 1993.

The groups were further sub-divided into cohorts of 86 individuals (table 2.1). The surviving individuals were contacted on a number of occasions over the study (table 2.2; figure 2.1).

AGE GROUP	BORN
70-74	1922 - 1915
75-79	1917 - 1910
80-84	1913 - 1905
85-89	1908 - 1900
90-94	1902 - 1896
95-103	1897 - 1883

Table 2.1 - Age cohorts and years born.

TIME	YEARS	NUMBER SURVIVING	NUMBER COMPLETING INTERVIEWS
T1 (baseline)	1990-1993	-	516
T2	1993-4	431	361
T3	1995-6	313	206
T4	1997-8	239	132
T5	2000	164	82
T6	2004-5	104	46
T7	2005	93	36
T8	2008-9	62	22

(Source: Smith et al 2002; www.base-berlin.mpg.de)

Table 2.2 - Numbers of participants at each study phase of BASE.

² Study website at <http://www.base-berlin.mpg.de/Home.html>.

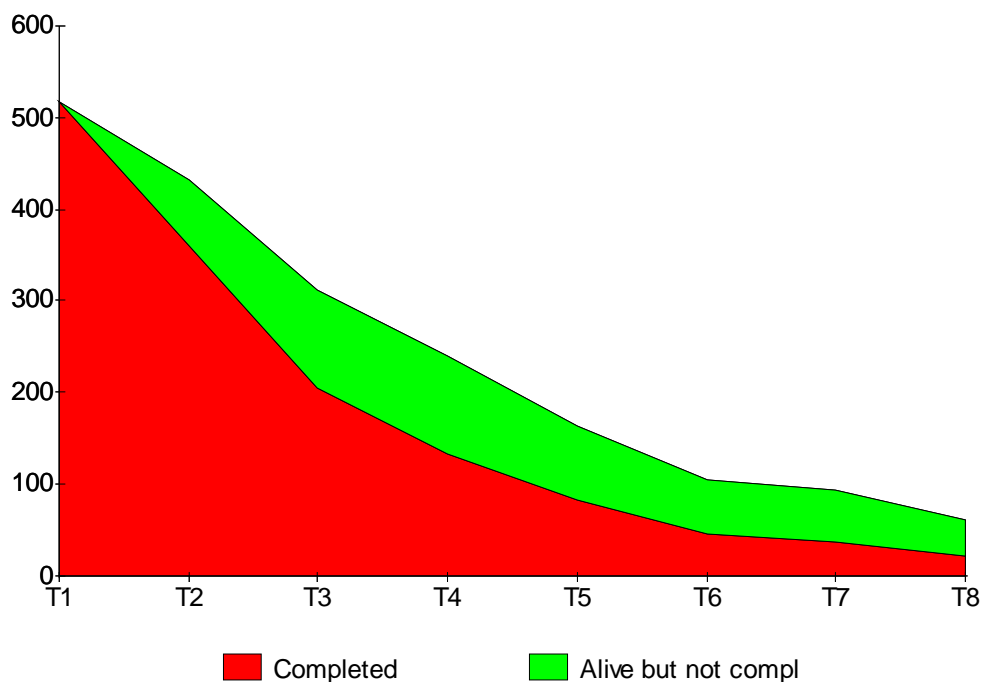


Figure 2.1 - Numbers of participants surviving and completing interviews at each Time.

For example, at T3 there were 206 individuals who completed six sessions of interviews. This was 101 men and 105 women, 78 individuals aged 73-79 years, 92 80-89 years, and 36 aged 90-103 years old (Smith et al 2002) (figure 2.2).



Figure 2.2 - Breakdown by age of participants still in study at T3.

2.2. KEY STRENGTHS

1. Focus upon young-old and oldest-old (ie: 70 years and more).

Many studies use adults in their 50s or 60s at the start of the research.

BUT: There is a greater risk of loss of participants

through death, particularly for the older age groups.

2. Detailed interviews and tests at baseline.

There were fourteen ninety-minute sessions with each individual over 3-5 months which collected information on approximately 10 000 variables. This included detailed personal life history, medical examinations, mental health measures, and assessment of psychological functioning. Thus both objective (eg: physiological) and subjective (self-reported) measures were taken.

It is better to collect too much information at the beginning because it is not possible to go back, as it were, if something is required at a later date.

BUT: Participation required great commitment to so many tests and interviews. Smith et al (2002) admitted that the researchers expected a high drop-out rate (ie: not completing all fourteen baseline sessions). Are the individuals who continued with all sessions typical of the population?

Furthermore, are the individuals changed by being part of such an intensive study? This is often called the "Hawthorne effect": "the tendency for people to behave differently when they know they are being studied" (Davis and Shackleton 1975 p55) (appendix 2A).

3. Volunteers were used.

1908 individuals were found from city records to be in the relevant age range ("parent sample"). Initially, 1491 of them agreed to participate, and this number was reduced to 516 after drop-out and exclusions.

BUT: The final sample was only 27% of the parent sample. While 90% of the 227 people excluded were older than 85 years.

4. The sub-division of the sample into cohorts.

The cohort effect is a problem for longitudinal studies. This is where a group will be affected by specific events which will change the group in a way not comparable to other groups, for example, a war.

Table 2.3 gives an example for three key events in twentieth century German history. For example, an individual born before 1900 will have their life dominated by wars and aftermaths. While an individual born after World War One will remember a united Germany and division will be a key experience (particularly

depending on which country the individual lived in - East or West Germany).

BORN	AGE AT WORLD WAR ONE (1914-18)	AGE AT WORLD WAR TWO (1939-45)	AGE AT GERMAN REUNIFICATION (1989)
1915	just born	20s	70s
1910	child	30s	80
1900	adolescent	40s	90
1885	20s	50s	over 100

Table 2.3 - Three key events in German history and date born.

BUT: The loss of individuals from each age cohort varied between T1 and T3, for example. The fewest individuals were left in the 70-74 age group, and the most in the 75-79 and 80-84 age groups (Smith et al 2002).

2.3. REFERENCES

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2.4. APPENDIX 2A - HAWTHORNE EFFECT

This term derives from a series of experiments carried out at the Hawthorne Works of the Western Electric Company in Chicago between 1927 and 1933 (Roethlisberger and Dickson 1939), though the term itself is not used by the researchers (Chiesa and Hobbs 2008).

Traditionally, the "Hawthorne effect" refers to individuals changing their behaviour because they are aware that they are being observed. For example, "An influence can occur in experiments when subjects know they are being studied and change their behaviour as a result" (Woolfolk and McCune-Nicolich 1984 p585). However, the term has been used in other and varying ways.

These include the influence of novelty on behaviour/production, "unconscious" awareness of being observed, "trying to control variables" in experiments, or akin to the "placebo effect" (table 2.4). "For a single phrase to be used to refer to such a wide (and often contradictory) range of phenomena is perplexing. It immediately calls into question the use of the term in a

casual, unqualified and unreferenced fashion" (Chiesa and Hobbs 2008 p71).

French (1953)	1st coined term about Hawthorne Works study to describe changes in production due to "'artificial' social aspects" and not changes in illumination, which was the purpose of experiments.
Environmental factors	Changes in environment that influence behaviour including "mere presence of an observer"
Intervening variables	Psychological and social factors that change behaviour like "good social interaction"
Behaviour change	eg: "reverse of a Hawthorne effect" (Fisher and Lerner 1994) (ie: decline in performance)
Relevance	Use of term in experiments generally
Related concepts	General use to include the "placebo effect" or "social facilitation"

Table 2.4 - Categories of different uses of term, "Hawthorne effect", as found by Chiesa and Hobbs (2008).

Furthermore, Chiesa and Hobbs (2008) argued, "It is also inappropriate for authors to employ the term in interpreting their own results since, given its multiple meanings, it provides no useful information for readers in terms of evaluating specific controlling effects" (p73).

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3. TESTING THREE THEORETICAL HYPOTHESES ABOUT SOCIAL PARTICIPATION

- 3.1. Introduction
- 3.2. Details of Utz et al (2002)
- 3.3. References
- 3.4. Appendix 3A - Null hypothesis and significance

3.1. INTRODUCTION

Social participation is the amount of social interaction with people other than the spouse. Whether this changes or not with old age depends upon the theoretical position taken.

Utz et al (2002) tested three theoretical hypotheses (appendix 3A) for social participation among widows in the six months following bereavement as compared to continuously married controls.

- Activity theory (Cavan et al 1949) - old roles are replaced with new ones as older adults continue to remain active. This gives the following hypothesis: "Although both widowed persons and controls will increase their social participation over time in response to age-related deficits and losses, widowed persons will exhibit higher levels of social participation compared with non-widowed persons because of simultaneously losing the multiple social roles that were tied to the marriage or the spouse" (p523).
- Disengagement theory (Cumming and Henry 1961) - older adults withdraw from society. Thus: "Although both widowed persons and controls will slowly disengage from social activities as they age, widowed persons will exhibit lower levels of social participation when compared with similarly aged married persons because the experience of losing a spouse serves as a striking reminder of one's own mortality and how disruptive death can be for survivors" (p523).
- Continuity theory (Atchley 1989) - individuals seek to "maintain role stability throughout the life course". So, "widows and non-widows will not necessarily differ in terms of social participation; rather prior levels of social participation will determine current levels of social participation" (Utz et al 2002 p523) (table 3.1).

	ACTIVITY THEORY	DISENGAGEMENT THEORY	CONTINUITY THEORY
WIDOWS	Increases over time, and more than controls	Reduces over time, and more than controls	Remains same
NON-WIDOWS /CONTROLS	Increases over time	Reduces over time	Remains same

Table 3.1 - Predictions about social participation by three theories.

3.2. DETAILS OF UTZ ET AL (2002)

Data were collected as part of the "Changing Lives of Older Couples" (CLOC) study³ in the Detroit area, USA, began in 1987-8. Two hundred and ten widowed individuals and 87 non-widowed controls were the focus of the study.

Social participation was a composite score of measures of informal and formal social participation:

- Informal - 2 questions; eg: "How often do you get together with friends, neighbours, or relatives and do things like go out together or visit in each other's homes?";
- Formal - 3 questions; eg: "How many hours did you spend doing volunteer work during the last six months?".

Each question was answered with a five choice response ranging from "at least once a day" (maximum) to "less than once a month" (minimum).

The results showed that, for both types of social participation, the widows showed no difference in means cores over time while the controls had a significant decline over time. The authors felt that the continuity theory fitted with the data, although it was not entirely conclusive. In fact, "none of the theories, as hypothesised in the context of widowhood, are wholly supported nor wholly refuted" (Utz et al 2002 p531).

Table 3.2 lists the key strengths and weaknesses of this study.

³ Official website at <http://www.cloc.isr.umich.edu/index.htm>.

STRENGTHS

1. Social participation was sub-divided into formal and informal.
2. The sample of widows included 80 men as many studies of widowhood are exclusively women.
3. It was a prospective study that interviewed at baseline and at six months after bereavement. It did not depend upon recall of past activities and the risks of bias involved.
4. Use of control group of age-matched married couples to indicate "normal" age changes in social participation.
5. Non-institutionalised English-speaking individuals only.
6. The demographic variables were similar between the widows and the control group (eg: age, education level, income before retirement).

WEAKNESSES

1. Sample from specific area in USA limits the generalisability.
2. Self-reported measures of social participation not verified independently.
3. Only adults older than 65 years involved.
4. Only measured social participation six months after bereavement not longer.
5. Social participation was measured at two points in time. These two points may not have been typical of the individual's behaviour.
6. Informal social participation asked about meeting and talking on the telephone, but not exchange of letters or electronic media.

Table 3.2 - Key strengths and weaknesses of Utz et al (2002) study.

3.3. REFERENCES

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3.4. APPENDIX - NULL HYPOTHESIS AND SIGNIFICANCE

Precision in the use of statistical terms is important, particularly in relation to the interpretation of significance levels.

Oakes (1986) offered social science academics the following alternative interpretations for significance obtained with $p < 0.01$:

i) You have absolutely disproved the null hypothesis;

ii) You have found the probability of the null hypothesis being true ⁴;

iii) You have absolutely proved your experimental hypothesis;

iv) You can deduce the probability of the experimental hypothesis being true ⁵;

v) You know, if you decided to reject the null hypothesis, the probability that you are making the wrong decision;

vi) You have a reliable experimental finding in the sense that if, hypothetically, the experiment were repeated a great number of times, you would obtain a significant result on 99% of occasions;

vii) The probability of the data given the null hypothesis is known (quoted in Coolican 1998).

The most popular choices were (v), (ii), and (iv), whereas (vii) is the correct one (Coolican 1998). In long hand, significance obtained at $p < 0.01$ is "the probability that these results would occur if the null hypothesis is true, if we had selected two samples at random from populations with the same means" (Coolican 2000).

⁴ Statistical tests cannot find the probability of the null hypothesis being true.

⁵ It is not possible to do this because it is not possible to do (ii) (Coolican 1998).

4. IMAGINING BEING OLD

- 4.1. Patterson et al (2009)
- 4.2. Phoenix and Sparkes (2008)
- 4.3. References

4.1. PATTERSON ET AL (2009)

A number of studies have looked at how younger people view the elderly generally. Many of the perceptions are negative, stereotyped, and seeing older people as a homogeneous group (eg: Scott et al 1998).

But what about young people imagining themselves as old? A complex set of ideas emerge.

Patterson et al (2009), for example, used a guided writing exercise that asked 100 16-18 year-old New Zealanders to imagine themselves at various ages. This method provided "insight into the meaning-making resources available to young people for understanding social norms, the discursive possibilities of these meaning-making resources for the enactment of individual identities, and the implications of meaning-making for social action" (p436).

Specifically, the participants from the Wellington area were asked to imagine themselves at eighty years old. Analysis of the writings by the researchers drew out three themes that "constituted a discourse of 'accomplished ageing'".

i) Ageing as a contingent achievement - The descriptions of the self at age 80 were presented in the context of a "happy, stable and contented life" with the typical milestones of adulthood, like marriage/intimate relationships, children, and material/financial security. For example, one female participant said: "I am retired, with a large sum of money relaxing in a bach (beach house) ..I have a partner who I have been with for many years. I feel great about my life as an eighty-year-old" (p441). Negative images were rare.

ii) Ageing as a time for harvest - Images of "harvest" were evident in the writings in the sense of seeds planted in earlier adulthood now bearing fruit. This was seen in finances, relationships, and "looking after oneself"; eg: "I have a great life living off all my money I have saved for my retirement" (female respondent) (p441).

iii) Being old, staying young - The body was described by many participants negatively, but this was balanced by "staying young" with interests and

activities. Images of cognitive decline were rare, and death was mentioned in some writings. The physical changes "happen" to individuals, but keeping active maintained agency in life.

Overall, "As a discourse, 'accomplished ageing' offers young people a guide to the meaning of ageing and older age ..While 'accomplished ageing' does not tell us how young people make sense of the experiences of the currently old, it does give insight into how many young people imagine themselves as agentic social actors throughout their future lives" (Patterson et al 2009 p447).

"Accomplished ageing" can be seen as parallel with "successful ageing" in both emphasising the "right" choices:

However, through the accomplished ageing discourse, the experience of old age is asserted by imagining the life-long self-management of one's corporeal and cognitive state and one's "corporate self": a prudent, self-reliant citizen who experiences ageing in the context of successful material accumulation and enduring familial relationships across the lifecourse. "Accomplished ageing" puts not only health and wellbeing largely in the hands of individuals, but also creates the responsibility to amass adequate material and emotional resources to live the normative "happy, stable and contented life" (Patterson et al 2009 p448).

4.2. PHOENIX AND SPARKES (2008)

In another study, Phoenix and Sparkes (2008) asked young athletes/sportspersons in the UK to describe themselves in the future. The twenty-two individuals (nine male, thirteen female) ranged from 19 to 27 years old, and had all played sport to a higher level (eg: regional representation).

Phoenix and Sparkes identified three "selves" from the semi-structured interviews.

i) "Sporting self" - This dominated now and focused upon the body.

ii) "Settled self" - This self was the future when "settled down" into the norms of job and family. It was associated with "middle age" and it was life after sport - "boring" but "secure".

iii) "Reflective self" - This self was expected to appear after aged 70, and involved looking back over what has been. Very negative beliefs about the body were

reported; eg: "You're sort bed bound, wheel chair bound, possibly slightly crippled" (male hockey player) (p218).

Among the sub-group of young people, athletes and sportspersons, their "experiences and beliefs about ageing were shaped by culturally constructed meta-narratives of progress and decline" (Phoenix and Sparkes 2008 p219).

3.3. REFERENCES

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Scott, T et al (1998) Secondary school students' knowledge of and attitudes towards older people: Does an education intervention programme make a difference? Ageing and Society 18, 2, 167-183

5. PERCEPTIONS OF OLDER WORKERS: PRESENTING CATEGORICAL DATA

- 5.1. Bar-charts and pie-charts
- 5.2. Examples
- 5.3. References
- 5.4. Appendix 5A - ANOVA

5.1. BAR-CHARTS AND PIE-CHARTS

Loretto et al (2000) investigated the perceptions of older workers among 460 undergraduates studying Business Studies at the University of Edinburgh in early 1997.

Results from this study will be used as examples of the presentation of categorical data. This type of data involves separate categories, and is non-continuous. It can be presented in the form of bar-charts or pie-charts.

Bar-charts show the categories of data in columns where the variation in height of the bars is important (table 5.1).

STRENGTHS	WEAKNESSES
1. Easy to draw.	1. Does not highlight differences as well as histograms, which vary the height and width of the bars.
2. Comparative size of categories can be shown better than with pie-charts.	2. Pie-charts better for showing the relationship of parts to the whole.
3. Values of quantities represented can be read off from scale of values, and thus easy to grasp results from a brief look.	3. Not as appropriate with continuous data.
4. Can be used with individual scores or group means and totals.	4. Can be misleading if scale on vertical axis is not accurate.

Table 5.1 - Strengths and weaknesses of bar-charts to summarise data.

Pie-charts show the division of the whole into "slices" (table 5.2).

STRENGTHS	WEAKNESSES
1. Easy to draw. 2. Easily portrays information. 3. Shows relationship of parts to the whole. 4. Easy to grasp results from brief look.	1. Comparison of size of categories poorer than bar-charts. 2. Other pictorial representations, like box and whisker plots, give a more sophisticated representation of the data. 3. If used appropriately is meaningless. 4. Better as a visual aid than detailed representation of the data.

Table 5.2 - Strengths and weaknesses of pie-charts to summarise data.

5.2. EXAMPLES

1. The experience of work of the respondents was measured by vacation jobs held. Table 5.3 presents the data for vacation jobs by male (n = 253) and female (n = 207) students.

NUMBER OF JOBS HELD	MALE STUDENTS	FEMALE STUDENTS
0	23	13
1	37	35
2	17	28
3	14	14
4	9	10

(After Loretto et al 2000 table 2)

Table 5.3 - Percentage of students and number of vacation jobs held.

Figure 5.1 presents the data in table 5.3 as a bar-chart. This shows clearly the comparison between male and female students - more male students have not had any vacation jobs, and more females have had two jobs, otherwise the two groups are similar. However, the pie-charts for males (figure 5.2) and females (figure 5.3) highlight the most common category - one job for both sexes.

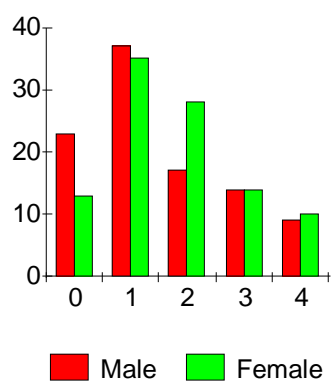


Figure 5.1 - Number of vacation jobs held by male and female students.

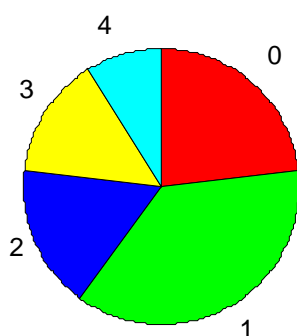


Figure 5.2 - Number of vacation jobs held by male students.

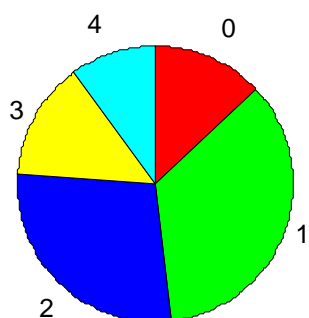


Figure 5.3 - Number of vacation jobs held by female students.

2. Perceived decline in performance of older workers was younger for female employees (60.5 years old for non-manual work and 48 years old for manual work) than male employees (64 and 52 years old respectively). A pie-chart is not appropriate here (figure 5.4), and a bar-chart (figure 5.5) shows the clear difference.



Figure 5.4 - Inappropriate use of pie-chart to show perceived age of decline for female workers.

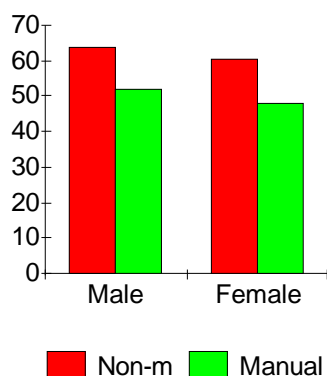


Figure 5.5 - Age of perceived decline in performance.

Analysis of variance (ANOVA) (appendix 5A) was conducted on the data to see if perceptions of decline in performance were affected by characteristics of the respondents, like gender, age. Age of perceived decline was later for older respondents as well as gender differences seen above.

3. A number of attitude statements were presented, and participants were offered the response choices of "agree", "disagree", or "unsure". Table 5.4 gives two examples.

Attitude statement	Agree	Disagree	Unsure
1. Youth employment more important than employment of over 50s.	53	30	17
2. Pay should increase automatically with length of service.	47	34	19

(After Loretto et al 2000 table 8)

Table 5.4 - Responses (%) to two attitude statements.

A bar-chart (figure 5.6) or a pie-chart (figure 5.7) can be used.

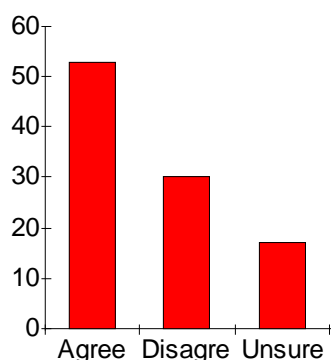


Figure 5.6 - Responses (%) to attitude statement 1 in table 5.4.

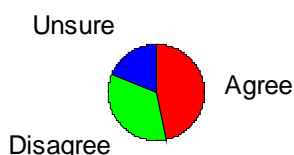


Figure 5.7 - Responses (%) to attitude statement 2 in table 5.4.

5.3. REFERENCES

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Loretto, W et al (2000) Ageism and employment: Controversies, ambiguities and younger people's perceptions Ageing and Society 20, 279-302

5.4. APPENDIX 5A - ANOVA

ANOVA compares more than two groups to see whether the means differ (table 5.5). It is based on the same assumptions (parametric) as the t test which compares two groups (Altman and Bland 1996).

It assesses whether the between groups variance (variability of group means) is greater than expected by chance. The null hypothesis predicts that the means are the same, and so the between groups and within groups variances will be the same (and $F = 1$).

If F is significant, then it is possible to compare pairs of groups with a t test. This should be done if F is not significant (Altman and Bland 1996).

SOURCE OF VARIATION	df*	SUM OF SQUARES	MEAN SQUARE**	VARIANCE RATIO (F)***	PROBABILITY (p)
Between groups					
Residual (within groups)					
Total	—	———			

* degrees of freedom (df) = number of groups minus one

** Sums of squares divided by df = variances associated with each component

*** The larger F the more different the group means

Table 5.5 - ANOVA results table.

6. SOCIAL PRODUCTIVITY AND WELLBEING

- 6.1. Introduction
- 6.2. McMunn et al (2009)
- 6.3. References

6.1. INTRODUCTION

Social participation can include "social productivity" ("continued activity that generates goods and services that are socially and economically valued by the recipient(s)"; Siegrist et al 2004); eg: paid work, volunteering, and caring for others.

Involvement in such activities can be beneficial for the individual in terms of wellbeing, but depending on the reciprocal nature of the activity. In other words, the rewards (financial or otherwise) received are equal to the effort expended (theory of effort-reward imbalance; Siegrist 1996).

6.2. McMUNN ET AL (2009)

McMunn et al (2009) looked at social productivity and wellbeing among participants of the English Longitudinal Study of Ageing (ELSA). This follows a group of nationally-representative individuals who were at least 50 in 2002. McMunn et al concentrated upon those of "state pension age or older" (males 65+, females 60+).

Paid work, voluntary work, and caring for someone were the three socially productive activities studied, and wellbeing was measured using three questionnaires about quality of life, life satisfaction, and depression. Table 6.1 summarises the level of participation in the three activities.

ACTIVITY	MALES (n = 2022)	FEMALES (n = 3362)
PAID WORK	9.5	10.4
VOLUNTEERING	11.9	14.5
CARING	9.7	13.7

Table 6.1 - Participation (%) in three activities in last month by gender.

In terms of wellbeing, men and women in paid work or volunteering had the highest mean quality of life and life satisfaction scores and the lowest depression scores. Women who had cared for someone in the last month

were less likely to be depressed than non-carers. Table 6.2 summarises some of the scores.

	MALES	FEMALES
Overall mean quality of life score (range 6-57) *	42.1	42.4
Overall mean life satisfaction score (range 5-35) **	27.0	26.3
Overall depression (%) ***	12.3	20.1
Highest quality of life score	Paid work: 45.8	Volunteer: 45.6
Highest life satisfaction score	Paid work: 28.5	Volunteer: 27.3
Least depression (%)	Volunteer: 4.6	Volunteer: 9.5

(* CASP-19 (Hyde et al 2003); higher score = better quality of life)
(** Satisfaction with Life Scale (Diener et al 1985); higher score = greater satisfaction)
(***) Center for Epidemiologic Studies Depression Scale (CES-D); % above score of 4)

Table 6.2 - Scores on three indicators of wellbeing.

The relationship between wellbeing and social productivity was affected by reciprocity.

a) Carers who did not feel appreciated had significantly worse quality of life and life satisfaction scores compared to non-carers, while carers who felt appreciated were less likely to be depressed than non-carers.

b) Volunteers who felt appreciated had higher quality of life and life satisfaction scores than non-volunteers. While volunteers, appreciated or not, were less depressed than non-volunteers, but unappreciated volunteers did not differ from non-volunteers on quality of life and life satisfaction scores.

c) Those in paid work with high effort-reward balance (effort and reward matched) were better off (wellbeing-wise) than not in paid work, but no different from low effort-reward balance (imbalance between effort and reward).

Overall, being socially productive was better for wellbeing than non-participation, but especially when the participants felt appreciated for their efforts.

6.3. REFERENCES

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7. WHAT IS WRONG WITH "SUCCESSFUL AGEING"?

- 7.1. Introduction
- 7.2. What is SA for older individuals?
- 7.3. Challenges to SA
- 7.4. References

7.1. INTRODUCTION

"Successful ageing" (SA) ⁶ is one of those terms commonly used in gerontology, but has no agreed definition (table 7.1) ⁷. In practice, SA is used to mean the absence of disease and disability, high levels of mental and physical functioning, and "active engagement with life" (Rowe and Kahn 1998).

Havighurst (1961)	"adding life to the years"; "getting satisfaction from life"
Gibson (1995)	"reaching one's potential and arriving at a level of physical, social and psychological wellbeing in old age that is pleasing to both self and others"
Palmore (1995)	Combines survival, health and satisfaction

Table 7.1 - Examples of definitions of SA in different publications (Bearon 1996).

Bearon (1996) saw the need for two definitions of SA - one for healthy older adults, and one for the frail elderly (eg: "maximising independence" or "enhancing autonomy").

SA, in many ways, is an attempt at balance when much time is spent on the negative aspects of ageing.

7.2. WHAT IS SA FOR OLDER INDIVIDUALS?

Bowling (2006) found that "lay" definitions of SA by older British adults were not necessarily the same as academic or professionals' definitions. She presented the 854 adults over 50 years old with an open-ended question ("What do you think are things associated with successful ageing?"), and a five-response choice closed question ("Thinking of all the things you think are associated with successful ageing, would you say you are ageing

⁶ Though the term has existed for a while, the current interest in SA as a concept is linked to Rowe and Kahn (1998) and a "new gerontology".

⁷ "But agreed by whom?" (Bowling 2006).

successfully so far?"). The most common themes from analysis of the open-ended question were "health" (eg: "having health"), and "psychological" (eg: "satisfaction with life"), followed by "social roles and activities" (eg: "having enjoyable interests"). Most respondents rated themselves as ageing successfully (table 7.2).

	Yes, very well	Yes, well	Yes, alright	No, not well	No, not very well
Overall (%)	39	37	18	4	2
Highest age group (%)	over 65s: 43	65-74: 38	50-64: 21	50-64 & over 75s: 5	over 75s: 3

(After Bowling 2006)

Table 7.2 - Answers to the question "...would you say you are ageing successfully so far?".

Phelan et al (2004) performed a similar study among Japanese-Americans and White Americans in Washington state. Their definition of SA was wider than published definitions and characteristics.

The 1985 second-generation Japanese-Americans aged at least 65 years old, who were part of the Kame Project, and the 2581 White Americans on the Adult Changes in Thought (ACT) study were offered twenty characteristics of SA identified from publications. Thirteen of the twenty were rated by over 75% of participants as important in SA.

7.3. CHALLENGES TO SA

Scheidt et al (1999) outlined their criticisms of the concept of SA:

i) The criteria of SA have become a fixed standard by which to compare individual's behaviour.

ii) Losses are viewed negatively.

iii) SA should involve multiple possible patterns rather than just the absence of disease, high functionality, and active engagement.

iv) What happens to individuals who lack the resources or capacity to age successfully? "Are they to be considered failures, continuing to reside among the mass of 'usual' agers or should they be accorded a

separate status?" (p280).

v) The responsibility for change and SA is placed upon the individual. "The individual is responsible for successes when they occur, and also responsible for her own failures" (p280).

vi) Active independence is presented as a virtue, and thus acquires a moral dimension, particularly with negative connotations for those not actively independent.

vii) Differences in social class, gender, and ethnicity/race and SA. Scheidt et al argued against the "one size must fit all" approach, "Otherwise, we shall surely continue to promote Procrustean formulae for enhancing the quality of life in the later years" (p281).

Holstein and Minkler (2003), from a critical gerontology position, argued that SA is not a neutral concept, but carries with it "unarticulated (and perhaps unexplored) values, assumptions, and consequences". First and foremost is the creation of the norm of health as success. Thus, "we must be ever wary of how we govern our lives. This view omits the natural lottery imposed by genetics, the general contingencies of human life, and the more specific damages (and often strengths) that marginalisation and oppression bequeath to many individuals" (p792).

Holstein and Minkler were not denying the importance of good health, only that it "should not be universally equated with the attainment of a good or successful old age".

"The problem of disability also looms. Within the successful ageing paradigm, and with a few notable exceptions, disability, even visible 'oldness' signifies failure or, at least 'usual' ageing" (Holstein and Minkler 2003 p792). This can be seen as part of the "constant quest for youth" which stigmatises the old and the sick as "human failures (Blaikie 1999).

Holstein and Minkler worried that older women are affected more by the "demands" of SA. Many older women concentrate upon caring (for grandchildren, spouses, friends), and this is "publicly underestimated and undervalued".

"Growing old in a society that not only valorises youth but informs people whoever they are that successful ageing - defined almost exclusively, in terms of health status - 'can be attained through individual choice and effort' (Rowe and Kahn 1998 p37) is potentially damaging personally and politically" (Holstein and Minkler 2003 p794).

SA in these terms is not a universal idea. Its association with self-sufficiency and independence is a Western view, whereas, in south-east Asia, for example, the family caring for the elder is the norm (Estes et al 2003).

7.4. REFERENCES

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8. TWO CHALLENGES TO AGEING: AGEISM IN A DIFFERENT WAY?

- 8.1. Introduction
- 8.2. Agelessness
- 8.3. Anti-ageing
- 8.4. References

8.1. INTRODUCTION

Gullette (2004) observed that "we aged more by culture than by chromosomes". So ageing is not only the physical changes, but also the experience of ageing in a social context with the values and norms associated with getting older. Thus these have been challenges to the concept of ageing.

Two concepts, "agelessness" and "anti-ageing", are briefly explored here. On the surface, they appear to be positive developments for older adults, but, in many ways, they confirm the ageist ideas in society - namely, that young is "good" and old is "bad".

8.2. AGELESSNESS

"Agelessness" is the idea that old age is a social category, and can thus be eliminated by individuals transcending their physical age with the maxim, "I am only as old as I feel". Bytheway (1995) argued that the category of "elderly" is "a cultural concept, a construction that has a certain popular utility in sustaining ageism within societies that need scapegoats" (p119).

Older individuals can attempt to hide their ageing by trying to "pass" as young with the use of cosmetics, for example (Andrews 1999). But Friedan (1993) asked, "How long, and how well, can we really live by trying to pass as young? By the fourth face-lift (or third?) we begin to look grotesque, no longer human".

Andrews (1999) disagreed with Bytheway, she suggested that agelessness is the ageism. "One of the more successful and subtle mechanisms through which ageism operates in our culture is in our redefinition of certain - desirable - types of old age as 'young'" (p301). The emphasis on still "young at heart" at whatever age ignores or trivialises the individual's history and all the things they have done, seen, and experienced.

Andrews (1999) concluded: "Researchers of ageing must learn to resist the temptation of agelessness.

Ironically, this denial of difference, the erasure of the years lived, further entrenches the barrier set us and them, as it strips the old of their history and leaves them with nothing to offer but a mimicry of their youth" (p316).

8.3. ANTI-AGEING

"Anti-ageing" is a term used to cover a number of activities. On the one hand, it includes medical practitioners who focus on the physical problems of old age, and the medicalisation of non-pathological parts of ageing. On the other, it includes attempts to slow the process of ageing with cosmetic aids, and to extend the lifespan (Vincent et al 2008). Many of these activities have commercial possibilities (eg: anti-wrinkle creams).

The desire to extend the lifespan ("prolongevity"; Gruman 2003) without extending suffering and infirmity is the aim of biogerontology, a new scientific discipline in recent years (Fishman et al 2008). But biogerontology is very careful to distance itself from attempts to extend life throughout, like injections from glands of various animals or other elixirs, which have no scientific basis. Biogerontology is firmly grounded in biological and medical knowledge.

"Anti-ageing" as a social movement combines both the confirmed scientific ideas and the less science evidence-based ones - the modern day elixirs (eg: "Gerovital" and "Geriol") (Fishman et al 2008).

Throughout history the desire to avoid death and control ageing has existed, and modern attempts to do so seem like a good thing. But modern biogerontology and anti-ageing suggest that control over biological ageing is imminent. This may or may not be the case. However, such claims are part, in the West, of "the power of biological and medical knowledge which dominates and makes self-evident the nature of old age" (Vincent 2008).

Furthermore, Vincent (2008) said: "I would argue that the key response to the anti-ageing movement should not necessarily be to question its scientific validity and credentials. But rather to rid science as a whole of its ageist preconceptions, a difficult task when it is embedded in a wider ageist culture ...The cultural devaluation of old age and the negative effects of the lucrative opportunities opened up for those who control the technologies with which to manipulate bodily symptoms of ageing, are arguably more at risk from genuine than from bogus science" (p338).

8.4. REFERENCES

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9. INDIRECT OBSERVATION: IMAGES OF OLDER ADULTS IN THE MEDIA

- 9.1. Introduction
- 9.2. Example: US television advertisements
 - 9.2.1. Evaluation
- 9.3. Example: News stories
- 9.4. Example: Animated films
- 9.5. References

9.1. INTRODUCTION

Systematic analysis of the media gives information about how society views a particular group or topic, and it is indirect observation⁸. This type of method has a number of strengths and weaknesses compared to direct observation of behaviour and other methodologies used (table 9.1).

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none">1. Media plays an important role in shaping attitudes and ideas in society.2. No ethical issues of observation, like invasion of privacy, as media images in public domain.3. Straightforward to conduct.4. Can study images over long period of time, and see changes over time (or between cultures).5. Can collect both quantitative and qualitative data.6. Some behaviour cannot be observed directly.	<ul style="list-style-type: none">1. Depends upon accuracy and honesty of observer (ie: risk of observer bias) (but true with any observation).2. Depends upon availability of materials. Researchers depend on the editing of the material by the media organisation. Thus it may not be representative of the whole event. In the case of historical material, it depends on what was archived.3. Sampling of material is key.4. Qualitative analysis has less reliability as it depends on how the researchers "read" the material.5. Not really able to explain why behaviour happens.6. Can be superficial and banal, particularly without theoretical bases.

Table 9.1 - Strengths and weaknesses of indirect observation of the media as a method.

⁸ The most common method is content analysis.

9.2. EXAMPLE: US TELEVISION ADVERTISEMENTS

Lee et al (2007) collected 1977 advertisements shown on the five main US television networks in a week in February 2003.

Each advertisement was coded based on the presence of an older adult (55 years or more):

- Gender;
- Ethnicity;
- Status - (a) spokesperson or most prominent visual representation, (b) supporting actor, (c) extra;
- Type of product/service being advertised;
- How elderly spokesperson portrayed based on seven stereotypes; eg: "Perfect Grandparent" (family-oriented, loving, supportive) ⁹.

Independent raters coded the advertisements until there was at least 95% agreement.

Older adults appeared in 286 advertisements (15% of total) ¹⁰. Within these advertisements, the older adults were more likely to be White, and to be male. The most common product/services featuring older adults were foods, medication/medical services, and health/beauty. More of the advertisements appeared in the afternoon than the evening and the morning. The number one portrayal by far of the spokesperson was "Golden Ager" (alert, healthy, sociable) (91% of cases).

9.2.1. Evaluation

1. Similar to a structured observation that collects objective, numerical data. The categories for coding were clearly defined beforehand, and inter-observer reliability between the coders was established.

2. It is a descriptive study that shows the amount of images, but does not explain the reasons for the images.

3. The estimation of age of characters depends upon the coder (age range: 22-47 years) as the advertisements will rarely say the character's age.

⁹ Stereotypes originally identified by Hummert et al (1994): "Perfect Grandparent" (family-oriented, loving, supportive), "Golden Ager" (alert, healthy, sociable), "John Wayne Conservative" (emotional, nostalgic, retired), "Despondent" (afraid, hopeless, neglected), "Recluse" (naïve, quiet, timid), "Severely Impaired" (inarticulate, incoherent, incompetent), and "Shrew-Curmudgeon" (bitter, ill-tempered, stubborn) (Lee et al 2007 p25)..

¹⁰ Just focusing upon the advertisements showing older adults is the same as event sampling in direct observation.

4. The coders' perceptions generally may have been different to the average television viewer. Thus this study is not able to tell how the images affected the viewers.

9.3. EXAMPLE: NEWS STORIES

Phillipson et al (2008) looked at news stories about "baby boomers" (individuals born between 1945 and 1954).

i) 256 articles with "baby boomers" in the title in UK newspapers between 2002 and January 2007. half of the stories related to economic and financial issues; eg: "Baby boomers hit share markets" (Times, 23/3/04).

ii) The first 250 articles on the Google News website in January 2007. Economic and financial issues were also most common in relation to "baby boomers" (eg: "Big Ben Warns of Boomer Time Bomb", New York Post, 19/1/07).

The most important theme from the news stories was that "the sheer size of the boomer cohort has been viewed as presenting distinctive problems". Yet, at the same time, having money to spend beyond that of earlier generations. The authors noted how news stories set the "broad tone of the cultural climate constructing the 'baby boomer' stereotype".

9.4. EXAMPLE: ANIMATED FILMS

Robinson et al (2007) analysed how older characters were portrayed in thirty-four Disney animated films between 1937 and 2004. Clear criteria were established for identifying an older character:

- An appearance of retirement;
- Extensive grey hair;
- Wrinkles of the skin;
- Extensive loss of hair or balding;
- Cracking voice;
- Use of an aid such as a cane or wheelchair;
- The parent of a son or daughter who is middle-aged or older;
- Evidence of grandchildren or great grandchildren (p205).

Two independent coders rated the older characters on variables like the level of activity, and personality traits.

Ninety-three older characters were found, of which 24 were non-human. The characters were more likely to be friends (26.9% of cases) or bosses (14.0%), and to be friendly and angry/grumpy/stern in equal measures (25% of both cases).

The authors said: "In conclusion, this research provides some evidence that Disney's animated films present older characters who are disproportionately white and male, who are somewhat incidental to plot development, who generally possess positive physical characteristics, and who possess primarily positive personality traits, yet manifest a sizeable number of negative and stereotypical traits" (Robinson et al 2007 p209).

9.5. REFERENCES

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10. THE DOUBLE STANDARD OF AGEING

- 10.1. Teuscher and Teuscher (2007)
 - 10.1.1. Methodology
 - 10.1.2. Results
- 10.2. References

10.1. TEUSCHER AND TEUSCHER (2007)

Older women are judged more negatively than older men in terms of physical appearance. Sontag (1972) called this the "double standard of ageing".

Evolutionary theories explain this difference as due to youthful appearance (ie: fertility) being a cue that men use to select women, whereas women select men by resource-holding power (eg: wealth) (Kenrick and Keefe 1992).

Teuscher and Teuscher (2007) investigated the preference for youthful faces among men and women, even when the individual was not a potential mate.

10.1.1. Methodology

One hundred and twenty-six black and white pictures of White faces of different age groups were collected. Fifty-four students at a Swiss university were asked to estimate the age and rate the attractiveness of each face. These scores were used to divide the pictures into four age groups (18-29.9 years, 30-44.9 years, 45-59.9 years, 60-78 years), and two sets of 32 photographs.

The main data collection was via the Internet. Individuals (n = 354)(age range: 16-83 years) were recruited through websites, and in person at a California university. Firstly, respondents rated their sexual orientation ¹¹. Then one set of 32 photographs of male and female faces of different ages was presented randomly, and the task was to rate each one for attractiveness from 1 ("very unattractive") to 10 ("very attractive").

10.1.2. Results

The following pattern of results emerged:

- Male ratings of male faces - Younger faces received

¹¹ 93 heterosexual men, 81 heterosexual women, 66 gay men, 75 lesbian women, 10 bisexual men, and 29 bisexual women.

significantly better ratings overall, but this effect was much stronger for gay respondents.

- Male ratings of female faces - Younger faces were rated significantly more attractive, and the effect was stronger for heterosexual men (table 10.1).

	HETEROSEXUAL	GAY	BISEXUAL
MALE FACES:			
18-29.9	4.5	6.0	6.0
30-44.9	3.8	4.4	4.4
45-59.9	3.3	3.3	3.3
60-78	3.0	2.5	3.0
FEMALE FACES:			
18-29.9	5.0	4.5	5.0
30-44.9	4.0	4.0	4.5
45-59.9	3.5	3.6	4.0
60-78	3.0	3.3	3.8

Table 10.1 - Approximate mean ratings for faces of different age groups by male respondents.

- Female ratings of male faces - Younger faces were rated significantly higher than older faces by all groups of sexual orientation. There was no effect of sexual orientation as with the male respondents.
- Female ratings of female faces - As with ratings of male faces above (table 10.2).

	HETEROSEXUAL	GAY	BISEXUAL
MALE FACES:			
18-29.9	5.0	4.3	5.0
30-44.9	4.5	3.6	4.8
45-59.9	3.5	2.9	4.3
60-78	3.0	2.5	3.3
FEMALE FACES:			
18-29.9	5.0	5.0	5.8
30-44.9	4.5	4.5	5.0
45-59.9	4.2	4.4	4.7
60-78	3.5	3.5	4.5

Table 10.2 - Approximate mean ratings for faces of different age groups by female respondents.

Overall, youngest-looking faces were rated as significantly more attractive (average of 5 out of 10) than the oldest-looking faces (average of 3) by all

respondents. But this was more pronounced for men when the face was a potential sexual partner (female for heterosexual men, male for gay men). Sexual orientation did not affect the female respondents' ratings.

The methodology of this study can be compared to three similar studies (table 10.3).

STUDY	DETAILS	ADVANTAGES OF TEUSCHER & TEUSCHER (2007) STUDY
Silverthorne & Quinsey (2000)	Asked heterosexual and homosexual men and women to rate photographs for "sexual attractiveness". Only used three pictures per age group.	<ul style="list-style-type: none"> * Rate "attractiveness", not "sexual attractiveness". * 8 pictures per age group. * Included bisexual men and women as respondents.
Bailey et al (1994)	Asked questions about age preferences for partners.	* Used actual photographs rather than questions.
Rexbye & Povlsen (2007)	Showed coloured face and full-length photographs of 70 years or more adults to a selection of different aged respondents in Denmark. They were asked to estimate the age and comment on the appearance.	* Only black and white photographs, but all age groups.
Overall		<ul style="list-style-type: none"> * Students asked to rate age-appearance before actual study. * Large sample.

Table 10.3 - Teuscher and Teuscher's (2007) study compared to three similar studies.

10.2. REFERENCES

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11. MEASURING SUBJECTIVE AGE

"Subjective age" is how old the person feels, and is separate from "chronological age" (objective measure from birth).

German study

Kleinspehn-Ammerlahn et al (2008) measured the subjective age of participants (70 years and older) of the Berlin Ageing Study (BASE) in Germany over a six-year period. Two questions were used: "How old do you feel?" (felt age), and "How old do you feel when you look at yourself in a mirror?" (perceived physical age). The responses were rated on a scale of 0 to 120 years.

The chronological age score was deducted from the subjective age to give the age discrepancy. A positive number showed that individuals felt older than their actual age, and a negative score that they felt younger.

Irrelevant of the chronological age, participants reported a subjective age that was lower - 11-13 years for felt age, and 6-10 years for perceived physical appearance. The study showed that feeling younger than chronological age continued as the individual aged, and that it was associated with life satisfaction.

Swedish study

Oberg and Tornstam (1999) studied Swedish men and women from the whole lifespan (20-85 years old). Subjective age was measured by completion of the sentences, "Inside I feel as if I were __ years old" (felt age), and "I think other people see me as if I were __ years old". Ten response categories were offered ranging from "15-19 years" to "95 years plus".

The felt age hovered around ten years younger than the actual age across the lifespan. Feeling of appearing younger was reported by about half of the respondents over 35 years old, and most respondents of the same ages (nearly three-quarters) reported feeling younger.

The two studies used different rating scales for measuring the respondents perceived age. The German study had a continuous scale (0-120) and the Swedish study used a series of categories (discrete scale). Table 11.1 summarises the difference between them.

CONTINUOUS SCALE	DISCRETE SCALE
<ul style="list-style-type: none"> • Eg: 0-120. • No limits to response chosen within the scale. • Produces only interval and ratio data, thus limited choice of statistical tests available. • But results can be reduced to categories. 	<ul style="list-style-type: none"> • Eg: age categories. • Each category separate from next. • Produces all types of data, but more commonly nominal data. • Categories cannot be changed into continuous scale.

Table 11.1 - Continuous and discrete scales.

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12. ANDROGEN DECLINE IN THE AGEING MALE **(ADAM) QUESTIONNAIRE**

The Androgen Decline in the Ageing Male (ADAM) Questionnaire was developed at the St. Louis University, USA to aid in identifying "a symptom complex associated with age-related decline in testosterone that may be amenable to therapeutic intervention" (Morley et al 2000). Central to this decline is erectile dysfunction.

Morley et al (2000) identified, from clinical experience, ten symptoms "commonly observed in older males with low BT levels"¹². The ten symptoms are the ten questions of the ADAM Questionnaire (table 12.1), to which individuals answer "yes" or "no". Diagnosis of ADAM is based on an answer "yes" to either question 1 or 7, or "yes" to at least three others.

1. Do you have a decrease in libido (sex drive)?
2. Do you have a lack of energy?
3. Do you have a decrease in strength and/or endurance?
4. Have you lost height?
5. Have you noticed a decreased ``enjoyment of life``?
6. Are you sad and/or grumpy?
7. Are your erections less strong?
8. Have you noted a recent deterioration in your ability to play sports?
9. Are you falling asleep after dinner?
10. Has there been a recent deterioration in your work performance?

(After Morley et al 2000 table 1 p1240)

Table 12.1 - ADAM Questionnaire.

Morley et al took measures of the blood level of testosterone from 316 Canadian physicians (aged 40-82 years) who completed the ADAM Questionnaire. Based on testosterone level, they were divided into three groups (low, low-normal, normal BT level) and their responses to the ADAM Questionnaire compared.

The men from the lowest BT level group answered "yes" significantly more often than the normal level men both to the key questions (1 and 7) and to the other questions (table 12.2). Only questions three and six were not significantly different.

¹² BT = bioavailable testosterone; ie: testosterone in the blood.

	LOWEST BT LEVEL (<70ng/dL)	NORMAL BT LEVEL (>90ng/dL)
Question 1	48.1	30.4
Question 7	60.8	41.9
Average for other questions*	37.5	25.3

(* my calculations from individual questions)

(After Morley et al 2000)

Table 12.2 - Percentage of "yes" replies by two groups based on testosterone levels.

Ten men completed the ADAM Questionnaire on two occasions 2-4 weeks apart to establish test-retest reliability. The correlation of the two scores were 0.885.

Criticisms

1. Methodological

i) All of the questions (except 4 and 9) are vague and such that many individuals will answer positively. The self-reported answers will depend upon social expectations rather than any objective criteria. Thus the testosterone level (objective measure) is correlated with a subjective perception (ADAM Questionnaire) rather than with an objective diagnostic measure.

The sample used - physicians - will have high expectations about their continued performance at work, and so are sensitive to age-matched declines.

ii) The cut-off point of three positive answers is quite low. It is not clear why the researchers chose this level. A low cut-off point is likely to produce "false positives" (individuals diagnosed with a disorder who do not have the disorder).

iii) The response choices of "yes" or "no" is very limiting. A range of responses would be more sensitive to variations.

iv) The ADAM Questionnaire shows test-retest reliability, but this does not guarantee validity. It is quite possible to have the former without the latter. In other words, a consistent measuring device that does not necessarily measure what it claims to measure.

v) Morley et al (2000) do not report the origin of the symptoms in the ADAM Questionnaire other than from

"clinical experience". Psychometric test design usually requires a collection of items which are reduced through statistical analysis to include the discriminating ones.

2. Conceptual

The ADAM Questionnaire is part of the medicalisation of the "andropause" ("male menopause") and its association to androgen deficiency (hypogonadism). This latter condition is relatively rare in men in the over-50s age group. The andropause is a social construction with little evidence for a biological menopause in men, and for serious consequences to declines in blood testosterone in older men (Marshall 2007).

The pharmaceutical industry emphasises that the andropause is a testosterone deficiency which can be treated with testosterone replacement therapy (TRT). Thus "the message, at least since the late 1990s, is that andropause is an age-related, hormone-deficiency disease for which most, if not all, men are at risk" (Marshall 2007 p518).

Furthermore, "Andropause reinvented as ADAM not only groups a variety of somewhat vague symptoms into a complex or syndrome but links them to a specific etiology (androgen decline). The foregrounding of erectile dysfunction as a symptom of andropause appears more related to the post-Viagra willingness of men to present with this disorder than it does to any evidence linking erectile dysfunction to low testosterone levels" (Marshall 2007 p519).

A positive response to question 7 about erectile dysfunction is central to the questionnaire, and immediately links this problem to deficiency. In the Massachusetts Male Ageing Study no link was found between erectile dysfunction and testosterone levels (Feldman et al 1994).

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13. A SIMPLE EXAMPLE OF THE USE OF THE CHI-SQUARE TEST - SOCIAL NETWORKS

Grossman et al (2000) surveyed 416 lesbian, gay, and bisexual (LGB) older adults in North America about their social networks. Table 13.1 shows the average number of men and women reported in the social networks. Looking at the results, lesbian and bisexual women have more women in their social networks than men, and the opposite is true for gay and bisexual men. But these differences may be due to chance, and so a statistical test is needed to establish if the difference is significant.

IN SOCIAL NETWORK:	MEN	WOMEN
Gay and bisexual men	4.42	1.78
Lesbian and bisexual women	1.57	5.76

Table 13.1 - Mean number of men and women in social networks.

An appropriate statistical test is chi-square (X^2) because the categories are unrelated (ie: individuals appear in one category exclusively). The formula is:

$$X^2 = \sum \frac{(O-E)^2}{E}$$

where: \sum = sum of
 O = observed frequency
 E = expected frequency

STEP 1: Observed frequencies (O) - This is the data as collected (table 13.2).

	Men	Women	Row total (R)
Gay and bisexual men	4.42 (cell A)	1.78 (cell B)	6.20 (A+B)
Lesbian and bisexual women	1.57 (cell C)	5.76 (cell D)	7.33 (C+D)
Column total (C)	5.99 (A+C)	7.54 (B+D)	Grand total (G) 13.53 (A+B+C+D)

Table 13.2 - Presentation of observed frequencies (O).

STEP 2: Expected frequencies (E) for each cell - This is the score in each cell if the results had occurred by chance. X^2 will show whether O is significantly different to E, in practice.

The E is calculated for each cell from table 13.2 as:

Row total (R) x Column total (C)

 Grand total (G)

Thus the E for each cell:

Cell A = $(6.20 \times 5.99) \div 13.53 = 2.74$
 Cell B = $(6.20 \times 7.54) \div 13.53 = 3.46$
 Cell C = $(7.33 \times 5.99) \div 13.53 = 3.25$
 Cell D = $(7.33 \times 7.54) \div 13.53 = 4.08$ ¹³

STEP 3: (O-E) for each cell

Cell A = $4.42 - 2.74 = 1.68$
 Cell B = $1.78 - 3.46 = -1.68$
 Cell C = $1.57 - 3.25 = -1.68$
 Cell D = $5.76 - 4.08 = 1.68$

STEP 4: Square the number for each cell in step 3 (ie: $(O-E)^2$).

All cells = 2.82

STEP 5: Divide the number for each cell in step 4 by its E (in step 2).

Cell A = $2.82 \div 2.74 = 1.03$
 Cell B = $2.82 \div 3.46 = 0.82$
 Cell C = $2.82 \div 3.25 = 0.87$
 Cell D = $2.82 \div 4.08 = 0.69$

STEP 6: Add the numbers in step 5 to give X^2 .

$X^2 = 1.03 + 0.82 + 0.87 + 0.69 = 3.41$

¹³ The total of the E for all cells should add up to G.

STEP 7: Calculate the degrees of freedom (df) from the original data.

$df = (\text{number of rows} - 1; r) \times (\text{number of columns} - 1; c)$

$df = (2 - 1) \times (2 - 1) = 1$

STEP 8: This is the calculated value ($X^2 = 3.41; df = 1$), and it must be checked against a table of critical values. To be significant, the calculated value must be greater or equal to the critical value (table 13.3).

Two-tailed	3.83
One-tailed	2.71

(After Coolican 1990)

Table 13.3 - Critical values for $df = 1$ and $p < 0.05$.

The difference in gender make-up of social networks between homosexual and bisexual men, and lesbian and bisexual men is significant if the hypothesis is one-tailed, but not two-tailed. A one-tailed hypothesis predicts the direction of the difference (ie: more same sex individuals in social networks), while a two-tailed hypothesis predicts a difference but not specifying the direction.

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14. KEEPING A FIT MIND

- 14.1. Use it or lose it
- 14.2. Physical activity
- 14.3. Appendix 14A - Ball et al (2002)
- 14.4. Appendix 14B - Colcombe and Kramer (2003)
- 14.5. Appendix 14C - Weuve et al (2004)
- 14.6. References

14.1. USE IT OR LOSE IT

Cognitive abilities in old age can be maintained by the popular activity of "use it or lose it" (Hertzog et al 2009). In other words, continuing to maintain cognitively active (eg: crossword puzzle solving) reduces any cognitive declines associated with physical ageing.

More formally, "use it or lose it" has been tested with cognitive training. For example, Ball et al (2002) (appendix 14A) randomly allocated 2500 individuals in the USA over 65 years to ten sessions of cognitive training or not. There were different types of cognitive training offered to different groups of individuals, like improving memory or reasoning. At a two-year follow-up, cognitive training led to better performance than the control group, but only in the specific skills trained, like memory, not overall.

However, cognitive training of executive function (including planning and control of behaviour) through a strategy video game improved executive function in the game and in other areas requiring those skills (Basak et al 2008) (box 14.1).

Forty older adults (34 completed the study and analysed) from Illinois, USA were randomly divided into the experimental and control conditions. The experimental condition involved training (23.5 hours) on a video game called "Rise of Nations", which requires decisions to gain land, destroy other civilizations, or build "Wonders of the World". Executive function was tested in a number of ways including solving simple mathematical problems while trying to remember sets of words.

Not only did performance on the video game improve for those trained, but their scores on the executive function tests were better than the controls.

Box 14.1 - Basak et al (2008).

14.2. PHYSICAL ACTIVITY

Other research has shown that physical activity aids cognitive abilities (Hertzog et al 2009). For example, older adults who participated in regular aerobic exercise, like walking, did significantly better on tasks to measure executive function, spatial ability, and speed of reaction than individuals who exercised with stretching and toning only or no exercise (Colcombe and Kramer 2003) (appendix 14B).

Weuve et al (2004) found, among over 16 000 nurses older than 70 years, that self-reported physical activities in the past year (ie: energy expended) correlated with cognitive change over a two-year period (ie: those most active had least cognitive decline) (appendix 14C).

14.3. APPENDIX 14A- Ball et al (2002)

The Advanced Cognitive Training for Independent and Vital Elderly (ACTIVE) trial was designed to test three cognitive interventions. Five thousand individuals aged 65-94 years were approached in six US states in 1998-9 (of which 2802 individuals participated and whose data were analysed).

They were randomised into four conditions - no intervention, cognitive training for memory, cognitive training for inductive reasoning, and cognitive training for speed of processing in ten 60-75-minute sessions. For example, the memory training taught mnemonic strategies and other ways to aid retention and recall.

Cognitive abilities were tested in December 2001 with everyday-like tasks (eg: speed of processing tested by asking participants to look up a specific telephone number).

Cognitive training was better than no training at two-year follow-up, especially in the ability of the cognitive training (table 14.1).

TRAINING/ TEST	MEMORY	REASONING	SPEED OF PROCESSING	NONE (CONTROL)
Memory	40	27	28	29
Reasoning	36	53	30	35
Speed of processing	36	35	73	37

(After Ball et al 2002)

Table 14.1 - Percentage of participants showing improvements in ability at two-year follow-up.

14.4. APPENDIX 14B - Colcombe and Kramer (2003)

This meta-analysis found eighteen studies of physical fitness and cognitive ability using the following criteria of inclusion:

- Not cross-sectional designs (ie: comparison of different groups). Longitudinal studies are better, in terms of controlling for individual differences, because they compare the same individuals at different points of time.
- Participants randomly assigned to conditions (exercise programme or control).
- Exercise programme supervised to check for adherence.
- The exercise programme included an aerobic fitness element (cardiovascular fitness like walking or dancing).
- Participants above fifty-five years old.

The outcome variables for four cognitive processes were coded as showing improvement or not during the study:

- Speed of processing - eg: reaction time to press button when light flashes.
- Visuospatial ability - eg: copy line drawing from memory after immediately viewing it.
- Controlled processing - eg: pressing one computer key for one stimulus and another key for another stimulus.
- Executive function - planning, inhibition, and organisation of cognitive processes; eg: respond to one cue while ignoring conflicting or irrelevant cues.

Because meta-analysis is dealing with a number of different studies, the results are re-analysed statistically to give standardised findings (known as the effect size; "g"). This was calculated as the mean of the post-intervention task performance minus the mean of the pre-intervention task performance, divided by the pooled standard deviation ¹⁴. A positive number shows improves in

¹⁴
$$g = \frac{M_{\text{post}} - M_{\text{pre}}}{SD_p}$$

performance during the study and a negative number is a decline in performance.

Overall, from the eighteen studies, both the control group and the exercise group showed improvements during the studies. The improvement in cognitive performance for the control group was an effect size of 0.164 (about 1/8 of a standard deviation) and 0.478 for the exercise group (about 1/2 a standard deviation). So exercise led to significant improvements in cognitive performance on the task used compared to no exercise.

Executive function showed the best improvement with exercise ($g = 0.68$) compared to controlled processing ($g = 0.461$), visuospatial ability ($g = 0.426$) and speed of processing ($g = 0.274$).

In terms of the exercise programme, combined aerobic and strength training ($g = 0.59$) was better than just aerobic exercise ($g = 0.41$). While short (1-3 months duration) and long (more than six months duration) programmes were better than medium length ones (4-6 months). The duration of the exercise session needed to be longer than thirty minutes to have an impact. The greatest benefit of exercise for cognitive functioning was for older participants (66 years and more) compared to the young-old (55-65 years).

14.5. APPENDIX 14C - Weuve et al (2004)

Weuve et al used participants from the Nurses' Health Study, which began in 1976 with 121 700 female registered nurses (aged 30-55 years) in eleven US states. They were studied every two years by questionnaire.

This particular research concentrated upon women aged seventy years and above between 1995 and 2001 ($n = 16\,466$). Cognitive testing was conducted via the telephone (eg: listen to list of digits and repeat backwards). Physical activity was self-reported as the average amount of time per week in the past year on various activities, like walking, running, and bicycling.

The women were then divided into five groups (quintiles) based on estimates of average energy expended in exercise (metabolic equivalent value; MET - hrs/wk ¹⁵).

The women in the highest quintile (ie: most active) were significantly better on all cognitive tests than the lowest quintile, and had 20% lower odds of cognitive impairment. It was not necessarily vigorous exercise that was important. Benefits to cognitive performance were

¹⁵ 1 MET = energy expended sitting quietly, while 12 MET = energy expended running.

found for women who walked the equivalent of 1.5 hours per week at a 21-30 min/mile pace (ie: 3-4 miles per week). Table 14.2 summarises the main scores for the highest and lowest quintiles on different tests.

	All physical activity ****	Walking
Telephone Interview for Cognitive Status (TICS) *	0.28	0.31 *****
Category fluency **	0.95	0.40 *****
Working memory and attention ***	0.34	0.35 ****

(* TICS (Brandt et al 1998), eg: delayed recall of ten-word list; ** eg: name as many animals in one minute; *** digit span repeated backwards; **** p<0.001 compared to lowest quintile; ***** p<0.003; **** p<0.03)

(After Weuve et al 2004)

Table 14.2 - Mean standardised differences in cognitive scores at baseline for highest quintiles (where lowest quintile = 0).

14.6. REFERENCES

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